

## Editorial

# Subjective is not Arbitrary

Walter Klöpffer

**Corresponding address:** Prof. Dr. Walter Klöpffer (Editor-in-Chief), C.A.U. GmbH, Daimlerstraße 23, D-63303 Dreieich, Germany;  
e-mail: C.A.U.@t-online.de

Ever since the birth of the SETAC-structure it has been my conviction that LCA consists of two essentially scientific components – Inventory Analysis and Impact Assessment – embedded in two softer components, Goal and Scope Definition at the beginning and Improvement Assessment (SETAC), Valuation (UBA) or Interpretation (ISO) at the end. The question of subjectivity first arose when it became evident that Impact Assessment according to the CML/SETAC method needs a valuation or weighting step in the case frequently encountered if the result of a comparative LCA is not unambiguous, i.e. if one product system seems to be "better" with regard to some but not all impact categories considered. This valuation cannot be performed by (exact) science alone since it evidently involves social values [1-3]. The valuation step would therefore better fit into the last component of LCA instead of into the Impact Assessment, where it was placed by SETAC and, unfortunately, seems to remain according to ISO CD 14042 furthermore subjective items were identified even in the Inventory Analysis: allocation in the case of coproducts and open-loop recycling. Recently, arguments pointing to subjectivity in the classification and characterization steps of the Impact Assessment component have been put forward by OWENS [4].

It is not the purpose of this editorial to deny the existence of subjectivities in LCA. I would rather like to put the matter in another perspective, as indicated in the title. The reason for doing so is my (subjective) perception that subjectivity is treated as a kind of evil in most contributions to the ongoing discussion, which must be avoided at nearly any price. Subjectivity seems to be equated with arbitrariness, which indeed has to be avoided. Subjective, however, in the connection with our problem only means "not objective" in the sense of the (exact) sciences. Objectivity in science is strived for by a set of rules providing guidance on how to perform and report experiments and theoretical work. These rules can be better followed in the natural sciences compared to the social sciences or humanities, the reason being simply that the sciences dealing with "the real world outside", such as physics, chemistry and biology, can more easily (although not completely) be abstracted from social and personal values, individual awareness, etc. compared to those sciences which study exactly those factors which are disturbing the postulated objectivity in science. Subjectivity in that sense, although incompatible with (exact) science, does not mean the absence of any scientific guidance of how to perform the necessary discussion about the values needed for performing the "subjective" parts of an LCA. Only unrepentant technocrats can deny this fact.

The second remark about subjectivity I would like to make concerns the existence of normative values [2]. These values,

of course, are not objective either, but most of them are codified in some way. The highest rank among these values is given by a codification by the United Nations, e.g. in the Universal Declaration of Human Rights. These values are binding for all member countries of the United Nations without any exception. The rules derived from these normative values are subjective in the meaning discussed above, but it would be foolish to attribute them to the kind of arbitrariness and individual subjectivity which seems to be the great fear in parts of the LCA community. There is no doubt that these normative values and rules should be used for valuating global issues. For regional and national issues, the specific values of a community of states or of a single nation may be consulted.

This being said, we have to admit that the operationalization of the normative values into simple rules, as required by LCA, is hard work, but it should be possible. The general manner of obtaining agreement on questions which cannot be solved objectively is the creation of conventions. An excellent example in the scientific and technical world are the units of measurement. The metric system in its present form, the "Système International d'Unités" (SI) according to ISO 1000 is not more scientific than other well developed systems, it is only more consistent, logical and easier to use; and it is the result of an international discussion which has been going on for two centuries. We certainly hope that the conventions needed in LCA – the present standardization within the ISO 14040 ff framework constitutes a first step – will not take as long as the example of the metric units. The example of the meter convention, however, shows the way which, in principle, has to be taken in order to prevent the unwanted arbitrariness and to lead the way to normative rules for those cases where truly objective solutions are either impossible to reach or would complicate the instrument LCA beyond feasibility.

For the special (but most difficult) problem of valuation, the German Federal Ministry for the Environment (BMU) together with UBA Berlin started a project in June 1996 [5,6] which has been coordinated by H. NEITZEL (UBA), R. MÜLLER-WENK and A.E. BRAUNSCHWEIG (both University St. Gallen, Switzerland). It has been accompanied by an advisory circle of approximately 20 representatives of government, research, industry, trade unions and ecological groups. The project, which is to be finished soon revealed many of the difficulties, but also the possible benefits of procedure-oriented versus consensus finding on the basis of a social dialogue and – at the same time – a high scientific level. Who will serve as the umbrella organization for similar – even more difficult – international endeavors? SETAC? ISO? Or an International Society for LCA-practitioners [7] which still waits for an initiation? In

order to learn from experience, I cordially invite the submission of papers on practical examples concerning how subjective matters have been dealt with within real LCAs.

#### Acknowledgement

This article owes much to many discussions with Prof. Dr. Birgit GRAHL, Lübeck, about the meaning of the term "scientific" in the different components of LCA.

#### References

- [1] GIEGRICH, J.; MAMPEL, U.; DUSCHA, M.; ZAZCYK, R.; OSORIO-PETERS, S.; SCHMIDT, T.: Bilanzbewertung in produktbezogenen Ökobilanzen. Evaluation von Bewertungsmethoden, Perspektiven. Endbericht des Instituts für Energie- und Umweltforschung Heidelberg GmbH (ifeu) an das Umweltbundesamt, Berlin. Heidelberg, March 1995. Published in: UBA Texte 23/95 Berlin 1995
- [2] VOLKWEIN, S.; KLOPFER, W.: The Valuation Step Within LCA. Part I: General Principles. Int. J. LCA 1 (1996) 36-39
- [3] FINNVEDEN, G.: Valuation Methods Within LCA - Where are the Values? Int. J. LCA 2 (1997) 163-169
- [4] OWENS, J.W.: Life-Cycle Impact Assessment: The Use of Subjective Judgements in Classification and Characterization. Int. J. LCA 3 (1998)
- [5] MERKEL, A.: ISO 14040. Foreword to No. 3, Int. J. LCA 2 (1997) 121
- [6] Research Project "Entwicklung einer konsensfähigen Bewertungsmethode für Ökobilanzen". BMU, Bonn and UBA, Berlin, June 1996-June 1998
- [7] KLOPFER, W.: Do we Truly Require an International Society for LCA Practitioners? Editorial, No 1, Int. J. LCA 2 (1997) 1

## Institutions: E2 Management Consulting

E2 Management Consulting is specialized in successfully combining economic goals with ecological challenges. E2's main areas of competence are:

- ◆ environmental strategies and management
- ◆ developing new services and products
- ◆ reducing cost through efficient resource use
- ◆ supporting environmental legal compliance
- ◆ minimizing financial and market risks
- ◆ involving people
- ◆ communicating environmental issues

The partners of E2 contribute long experience of how to profit from economy and ecology in industry, trade, banking and service. We use specific tools, e.g. strategic market analysis, ecobalance and eco-controlling, eco-marketing, enviro-financial performance analysis, innovative learning techniques and leading edge communication solutions.

For further information, please contact us: e2post@e2mc.com

- ◆ Oliver Schmid-Schönbein, lic. oec. HSG, founding partner
- ◆ Daniel Rufer, Dr. Ing. ETH, MBA, founding partner
- ◆ Christophe Loretan, Dipl. sc. nat. ETH
- ◆ Franz Knecht, lic. iur., partner, until 1998 Head of Environmental Management at Swiss Bank Corporation
- ◆ Arthur Braunschweig, Dr. oec. HSG, partner, until 1997; Director of the Swiss Association for Ecologically Conscious Management (öbu)

Arthur Braunschweig  
E2 Management Consulting AG  
Economy and Ecology in Business  
Höhenweg 18  
CH-9000 St. Gallen  
Switzerland  
Phone: +41-71-220-91 44; Fax -220 91-45

#### Nota bene:

Schriftenreihe Umwelt Nr. 297 Ökobilanzen:  
Bewertung in Ökobilanzen mit der Methode der ökologischen Knappheit  
Ökofaktoren 1997

Hrsg.:	Bundesamt für Umwelt, Wald und Landschaft (BUWAL) Bern, 1998
Auftraggeber:	Bundesamt für Umwelt, Wald und Landschaft (BUWAL) Schweizerische Vereinigung für ökologisch bewusste Unternehmensführung (ÖBU) Migros Genossenschafts-Bund Coop Schweiz Geberit International AG Isover S.A.
Begleitgruppe:	Arthur Braunschweig, ÖBU Peter Bär, Migros Genossenschafts-Bund Christoph Rentsch, BUWAL Leo Schmid, Coop Schweiz Georg Wüst, Geberit International AG
Bearbeitung:	Gabriele Brand, Adrian Scheidegger, Othmar Schwank (INFRAS), Arthur Braunschweig (Kapitel 2.1. bis 2.3., 2.6.)
Bezugsquelle:	Bundesamt für Umwelt, Wald und Landschaft Dokumentation CH-3003 Bern Fax: +41-31-324-02-16 E-Mail: docu@buwal.admin.ch Internet: <a href="http://www.admin.ch/buwal/publikat/d/">http://www.admin.ch/buwal/publikat/d/</a>